In the claims:

Please amend the claims as follows:

1. (previously and currently amended) An isolated targeting cell comprising a vector, said vector comprising a nucleic acid sequence encoding a fusion protein, said fusion protein comprising:

(a) a targeting domain comprising a first member of an affinity pair; and

(b) a toxic domain comprising a toxic molecule,

wherein said targeting cell is a T lymphocyte and has significant binding affinity for a ~~pathogenic~~ cancer cell, said targeting cell expressing and secreting said fusion protein, ~~and~~ said first member binds to a second member of said affinity pair, said second member being expressed on a surface of the pathogenic cell, and wherein said first member is not an antibody, or a fragment of an antibody, specific for said second member.

2. (original) The targeting cell of claim 1, wherein said first member is a cytokine.

3. (original) The targeting cell of claim 1, wherein said first member is selected from the group consisting of an antigen, a ligand for a cell adhesion receptor, a ligand for a signal transduction receptor, a hormone, and a molecule that binds to a death domain family molecule.

4. (original) The targeting cell of claim 2, wherein said cytokine is interleukin (IL)-4.

5. (original) The targeting cell of claim 2, wherein said cytokine is selected from the group consisting of IL-1, IL-2, IL-3, IL-5, IL-6, IL-7, IL-8, IL-10, IL-12, IL-13, IL-15, interferon (IFN)-α, IFN-β, IFN-γ, tumor necrosis factor (TNF)-α, a transforming growth factor (TGF), granulocyte-macrophage colony stimulating factor (GM-CSF), vascular endothelial growth factor (VEGF), and epidermal growth factor (EGF).

6. (original) The targeting cell of claim 1, wherein said second member is a cytokine receptor.

7. (original) The targeting cell of claim 1, wherein said second member is selected from the group consisting of an antibody, a cell adhesion receptor, a signal transduction receptor, a hormone receptor, and a major histocompatibility complex (MHC) molecule-peptide complex.

8. (original) The targeting cell of claim 6, wherein said second member is an IL-4 receptor (IL-4R).

9. (original) The targeting cell of claim 6, wherein said second member is a receptor for a cytokine selected from the group consisting of IL-1, IL-2, IL-3, IL-5, IL-6, IL-7, IL-8, IL-10, IL-12, IL-13, IL-15, IFN-α, IFN-β, IFN-γ, TNF-α, TGF, GM-CSF, VEGF, and EGF.

10. (currently cancelled)

11. (currently amended) The targeting cell of claim ~~10~~ 1, wherein said cancer cell is a malignant hematological cell.

12. (currently amended) The targeting cell of claim ~~10~~ 1, wherein said cancer cell is selected from the group consisting of a neural tissue cancer cell, a melanoma cell, a breast cancer cell, a lung cancer cell, a gastrointestinal cancer cell, an ovarian cancer cell, a testicular cancer cell, a lung cancer cell, a prostate cancer cell, a cervical cancer cell, a bladder cancer cell, a vaginal cancer cell, a liver cancer cell, a renal cancer cell, a bone cancer cell, and a vascular tissue cancer cell.

13. (currently cancelled)

14. (currently cancelled)

15. (previously amended) The targeting cell of claim 1, wherein said T lymphocyte is a CD8+ T lymphocyte.

16. (previously cancelled)

17. (previously amended) The targeting cell of claim 1, wherein said toxic molecule is diphtheria toxin (DT) or a functional fragment of DT.

18. (original) The targeting cell of claim 17, wherein said toxic molecule comprises amino acids 1-390 of DT.

19. (previously amended) The targeting cell of claim 1, wherein said toxic molecule is: (i) a polypeptide selected from the group consisting of ricin, *Pseudomonas* exotoxin (PE), bryodin, gelonin, α-sarcin, aspergillin, restrictocin, angiogenin, Pseudomonas exotoxin, saporin, abrin, and pokeweed antiviral protein (PAP), or (ii) a functional fragment of the polypeptide of (i).

20. (original) The targeting cell of claim 1, wherein the vector is a retroviral vector.

21. (original) The targeting cell of claim 1, wherein the vector is selected from the group consisting of a plasmid, an adenoviral vector, a adeno-associated viral vector, a vaccinia viral vector, a lentiviral vector, and a herpes viral vector.

22. (previously amended) An isolated population of cells, wherein each of a substantial number of the cells of the population is the targeting cell of claim 1.

23. (previously amended) The targeting cell of claim 1, wherein said vector further comprises a mammalian signal sequence, wherein said mammalian signal sequence is located 5' of the 5' end of said nucleic acid sequence encoding the fusion protein.

24. (original) The targeting cell of claim 23, wherein said signal sequence is a signal sequence encoding a natural leader sequence of said first member.

25. (original) The targeting cell of claim 24, wherein said first member is IL-4.

26. (currently cancelled)

27. (currently cancelled)

28. (currently cancelled)

29. (currently cancelled)

30. (currently cancelled)

31. (currently cancelled)

32. (currently cancelled)

33. (currently cancelled)

34. (previously and currently amended) A method of treating a subject with ~~a pathogenic cell disease~~ cancer, said method comprising administering said cell population of claim 22 to said subject.

35. (previously cancelled)

36. (previously and currently amended) A method of making said cell population of claim 22, the method comprising:

(a) providing an isolated cell preparation wherein each of a substantial number of said cells of said preparation has significant binding affinity for a ~~pathogenic~~ cancer cell; and

(b) transfecting or transducing said cells of said preparation with a vector comprising a DNA sequence encoding a fusion protein including:

(i) a targeting domain comprising a first member of an affinity pair; and

(ii) a toxic domain comprising a toxic molecule,

wherein, after said transfection or said transduction, a significant number of said cells of said preparation express and secrete the fusion protein, ~~and~~ said first member binds to a second member of the affinity pair, said second member being expressed on a surface of said ~~pathogenic~~ cancer cell, and wherein said first member is not an antibody, or a fragment of an antibody, specific for said second member.

37. (original) The method of claim 36, further comprising, after said transfection or said transduction, enriching for cells expressing and secreting said fusion protein.

38. (currently amended) A viral vector comprising a nucleic acid sequence encoding a fusion protein, said fusion protein comprising:

(a) a targeting domain comprising a first member of an affinity pair;

(b) a toxic domain comprising a toxic molecule; and

(c) transcriptional and translational regulatory sequences operably linked to said DNA sequence, said regulatory sequences allowing for expression of said fusion protein in a cell of a mammal,

wherein said first member binds to a second member of said affinity pair, said second member being expressed on a surface of a ~~pathogenic~~ cancer cell, and wherein said first member is not an antibody, or a fragment of an antibody, specific for said second member.

39. (previously amended) The vector of claim 38, further comprising a signal sequence, wherein said signal sequence is located 5' of the 5' end of said nucleic acid sequence encoding the fusion protein.

40. (original) The vector of claim 39, wherein said signal sequence is a signal sequence encoding a natural leader sequence of said first member.

41. (original) The vector of claim 40, wherein said first member is IL-4.

42. (original) The vector of claim 38, wherein the vector is a retroviral vector.

43. (previously amended) The vector of claim 38, wherein the vector is selected from the group consisting of an adenoviral vector, a adeno-associated viral vector, a vaccinia viral vector, a lentiviral vector, and a herpes viral vector.